NY - GEO 2025

APRIL 23-24, 2025 | SARATOGA SPRINGS, NY

Non-Pipeline Alternatives:

Bringing Together Utilities & the Heat Pump Industry

Moderator: Will Lange / *WaterFurnace International*

Panel: Marwa Chowdhury / *Central Hudson*

Owen Brady-Traczyk / *National Grid*

POLICY & PROGRAMS • ROOM M2A • 3:00 – 4:00 PM

April 24th, 2025

Non-Pipeline Alternatives

NY GEO 2025

Marwa Chowdhury, Assoc. Program Manager

Central Hudson

315,000 electric customers
91,000 gas customers

Types of Non-Pipeline Alternatives (NPA)

NPA Solutions

Transportation Mode Alternatives

- Cost-effective alternative to pipe upgrades
- Supports gas system reliability
- Promotes electrification

Load-Growth Based

- Designed to manage increasing demand or areas of capacity constraint
- Promotes demand response & energy efficiency

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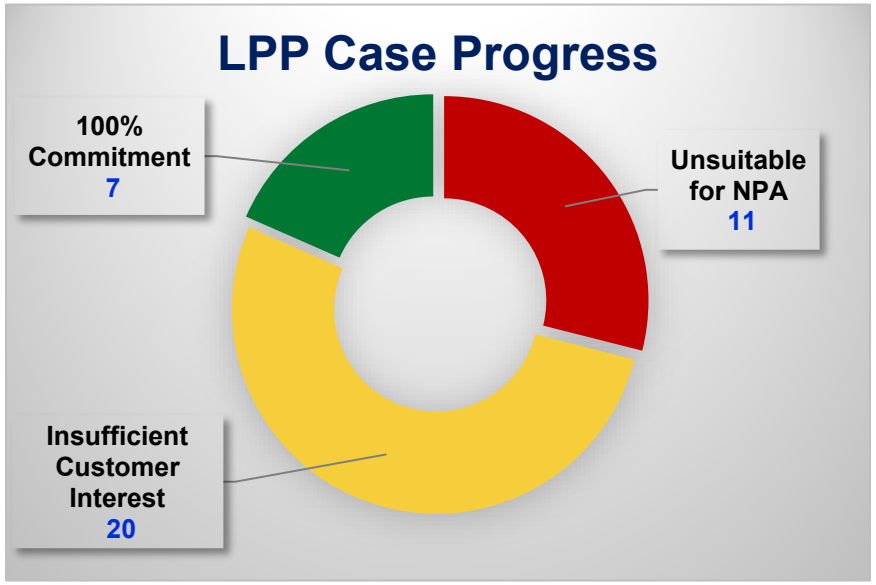
Transportation Mode Alternatives

- Central Hudson has a target to replace at least 15 miles of Leak Prone Pipe per year.
- TMAs replace gas-using equipment with electric devices along LPP.
  - Effective in low-saturation, high replacement cost scenarios
  - Also considered for “unique” scenarios
  - 100% participation required in each case location



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Notable Achievements for NPAs

4,189 ft. of Leak-Prone Pipe Eliminated

7 cases, 13 Homes Converted

Approx. $909k in gas infrastructure investments avoided

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Whole-Home Upgrade

- Full Electric Conversion
  - ASHP/GSHP Installation in compliance with NYS Clean Heat Guidelines
  - Heat pump water heater
  - Electric cooking range
  - Other appliances as needed (ex: electric clothes dryer)
  - Electric panel and wiring upgrades
- Weatherization as needed
- Central Hudson covers equipment & installation costs

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Example Project

- 560 ft. Leak Prone Pipe
- Avoided Replacement Cost: $217k
- Building Overview:
  - 5 homes: Mini-split and ducted HVAC appliance solutions, appliance and panel upgrades.
  - Retired NG generator, heated basement

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Example BCA Calculation

SCT	UCT	RIM	Participants
1.34	1.04	1.15	1

Net Benefit (Avoided T&D)						
BENEFIT	BENEFIT	BENEFIT	BENEFIT	BENEFIT	BENEFIT	
Avoided Energy Cost, Electricity	Avoided Main Replacement and Services	Avoided Electric Capacity Cost	Avoided Electric T&D Cost	Avoided CO2 Emissions Cost	Avoided Natural Gas Cost	Total Benefits
$ (2,615.98)	$ 118,066.35	$ (3,694.99)	$ (4.93)	$ 1,049.94	$ 3,491.34	$ 116,291.73

Actual Cost	
COST	
Program Administration Costs	Total Costs
$ 86,516.00	$ 86,516.00

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Thank You!

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National Grid NPAs

April 24, 2025

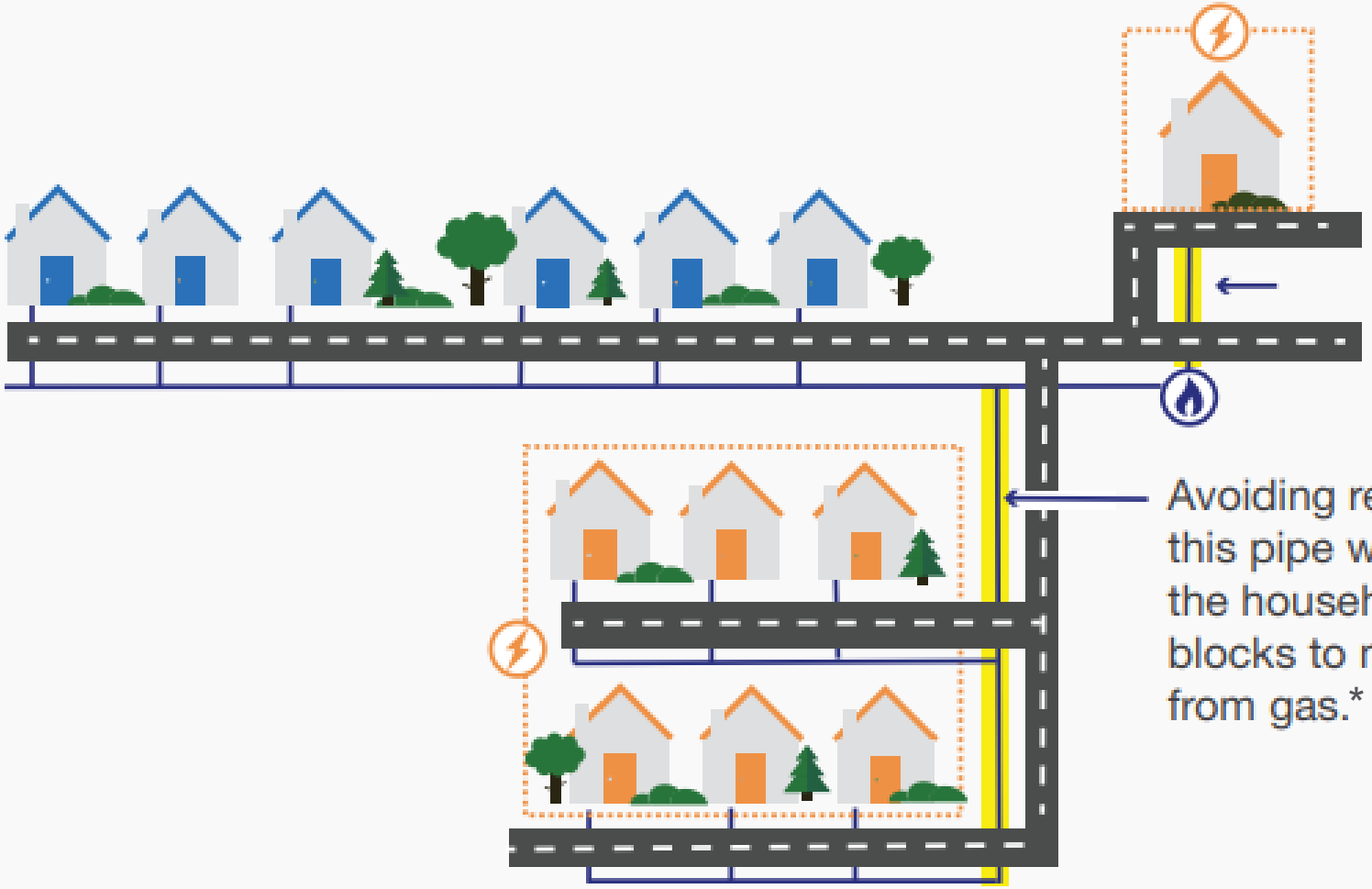
nationalgrid

What Are Non-Pipe Alternatives (NPAs)?

NPAs are:

- Any targeted investment or activity that are intended to defer, reduce, or remove the need to construct or upgrade components of the natural gas system.
- **Incentives to encourage customers to consider and adopt solutions that can achieve that intended goal**
- **Are comprised of tested solutions that already exist in the market** – namely energy efficiency, electrification of heat, and gas demand response.
    - The energy efficiency and heat pump programs (administered via the state's NE:NY framework) and National Grid's gas demand response programs also reduce gas demand. However, because they are not targeted in such a way as to enable the avoidance, deferral, or reduction of specific capital projects, they do not necessarily enable NPAs.
- **Funded from the avoided cost of the specific gas infrastructure project to which it serves as an alternative.**
    - If a specific gas infrastructure project does not exist, an NPA cannot exist. Furthermore, if the actions taken do not result in an avoided cost, the NPA would not be cost-effective.

The Three NPA Types: Leak-Prone Pipe (LPP) NPAs



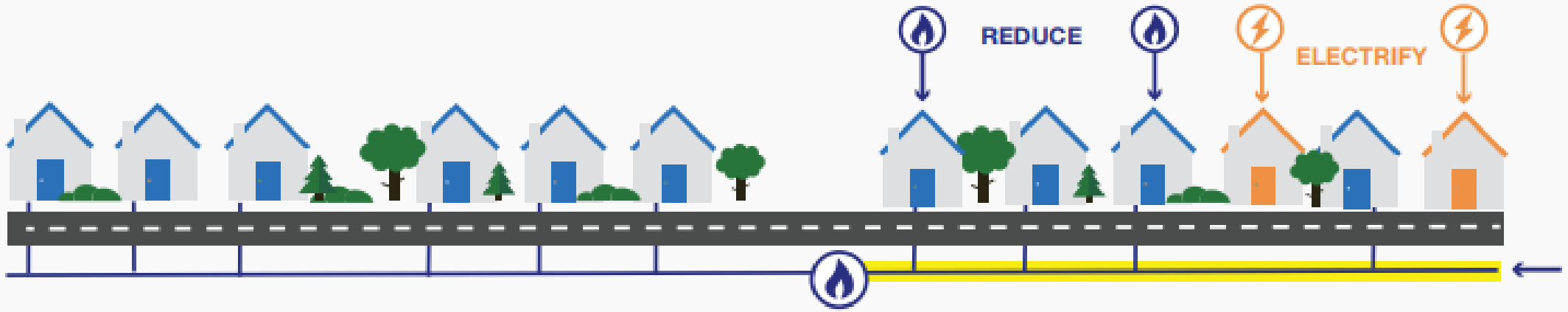
Avoiding replacement of this pipe would **only** require this house to fully electrify.

Avoiding replacement of this pipe would require all the households on these blocks to move away from gas.*

** Except in one of two alternate scenarios. See slides 17 and 18 for more details.*

Image credit: RMI/National Grid study, "Non-Pipeline Alternatives: Emerging Opportunities in Planning for U.S. Gas System Decarbonization", published May 2024

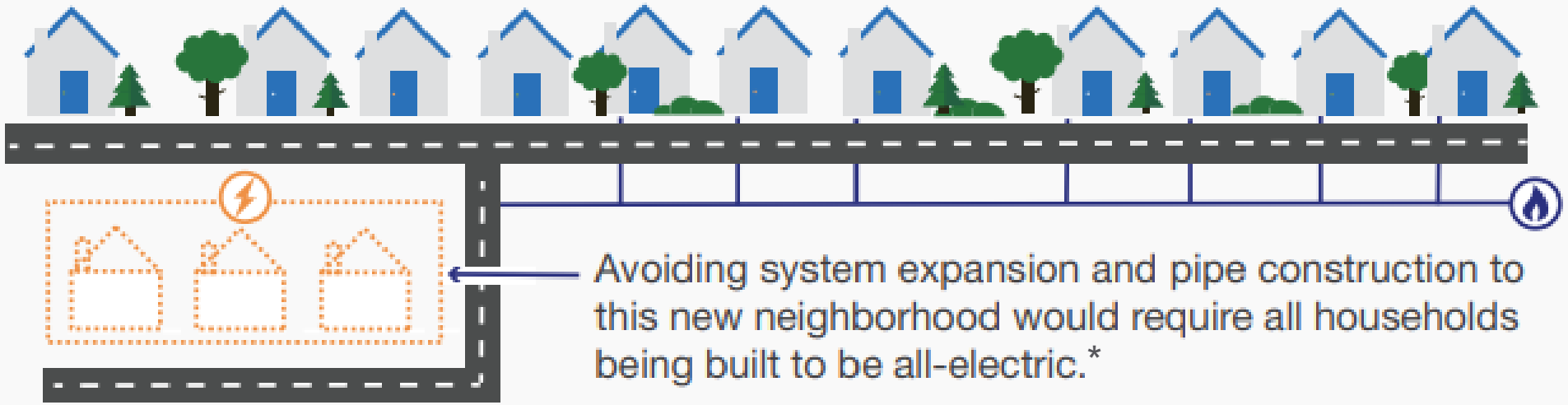
The Three NPA Types: Reliability & Reinforcement (R&R) NPAs



To avoid a capacity upgrade for this pipe, buildings beyond this pipe segment would need to reduce their overall gas demand – this could be through incremental reductions across the group, or full electrification of some customers. This reduction would not require 100% participation of all households.

Image credit: RMI/National Grid study, "Non-Pipeline Alternatives: Emerging Opportunities in Planning for U.S. Gas System Decarbonization", published May 2024

The Three NPA Types: New Connection NPAs



** Except in one of two alternate scenarios. See slides 17 and 18 for more details.*

Image credit: RMI/National Grid study, "Non-Pipeline Alternatives: Emerging Opportunities in Planning for U.S. Gas System Decarbonization", published May 2024

Important Differences Between NPA Types

NPA Type	Requires 100% of eligible participants to participate?	Solution Type		
		Full electrification*	Energy efficiency	Gas demand response
Leak-Prone Pipe (LPP)	yes	required	not required *(but supports full electrification)*	not applicable
Reliability & Reinforcement (R&R)	not necessarily *(only requires that a minimum threshold of aggregate peak demand reduction be achieved among the pool of eligible participants)*	not required *(but achieves relatively large per-participant Design Day demand reductions)*	not required *(but can support full electrification and, when not paired with electrification, reduces peak demand)*	potentially applicable to larger R&R NPAs
New Connection	yes	required	not required *(but supports full electrification)*	not applicable

*Note that partial or hybrid electrification of heat, in which a customer installs heat pumps but retains the use of a gas-fired heating system for backup heating, is not currently a feasible NPA solution. This is because, on the one hand, LPP and New Connection NPAs require a total reduction of peak gas usage, which partial/hybrid systems do not achieve, in order to eliminate gas system connections. R&R NPAs, on the other hand, do not require total reduction of peak gas usage by all participants, but they do require aggregate reductions in peak demand. Partial/hybrid do not provide those reductions, since they typically operate in configurations or using control systems whereby electric heat pumps may provide heat at moderately cold temperatures, but the majority if not all of heating needs during very cold temperatures (i.e., at peak times) are supplied by the backup fossil fuel-fired system. This means that, although hybrid/partial system can achieve reductions in annual gas consumption, they typically do not reduce peak demand and so cannot contribute to the peak demand reductions required for success of R&R NPAs.

NPA Stages: Overview

Stage 1: Identification

Can an NPA be a feasible alternative to this gas infrastructure project?

If the answer is YES, the NPA proceeds to:

Stage 2: Evaluation

Is there sufficient interest in participation from eligible participants for the NPA to move forward? If sufficient interest exists, is it cost-effective to proceed?

If the answer is YES, the NPA proceeds to:

Stage 3: Deployment

Is the NPA deployed successfully so that the gas infrastructure project can be modified as envisioned?

If the answer is YES, the NPA proceeds to:

Stage 4: EM&V, Accounting, and Closeout

NPA Stages: Details

Stage	Scope of Work	Who Performs the Work?
Stage 1: Identification	• Technical screening for NPA feasibility • High-level cost-effectiveness test	National Grid's Gas Asset Management and Engineering Teams
Stage 2: Evaluation	• Community engagement • Customer engagement / Expression of Interest form • Home/building energy assessments • Customer Participation Agreements • Benefit-Cost Analysis (BCA)	NPA Implementation Contractor (in consultation with National Grid's Customer and Corporate Affairs teams)
Stage 3: Deployment	• Installation of all necessary equipment and measures	NPA Implementation Contractor
Stage 4: EM&V, Accounting, and Closeout	• EM&V (if needed) • Closeout and documentation • Retirement of LPP segment or modification to capital plan	National Grid's Customer and Gas Asset Management and Engineering Teams

How does this apply in the real world?

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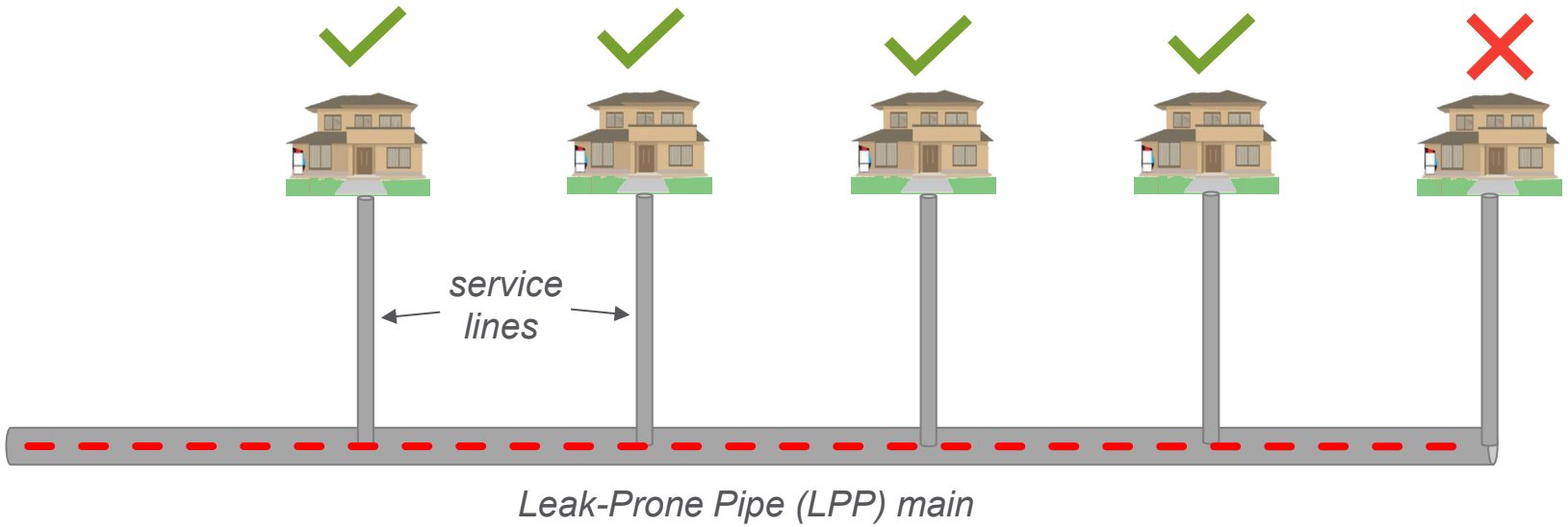
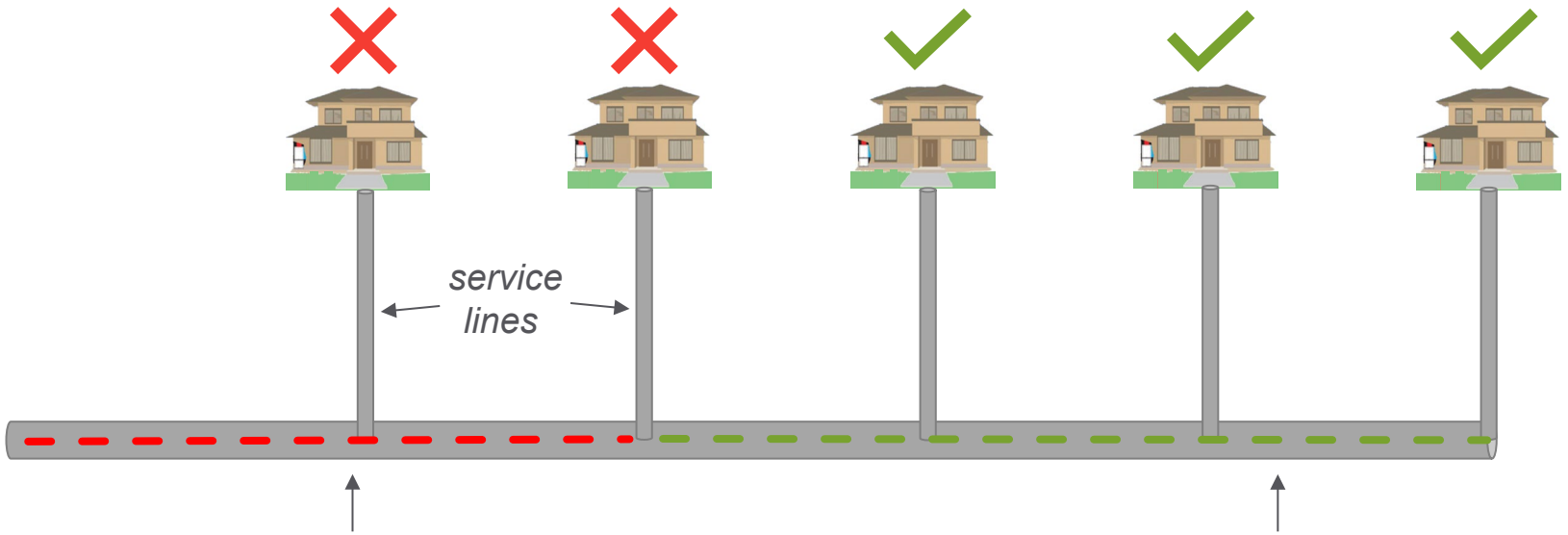
The 100% Participation Threshold



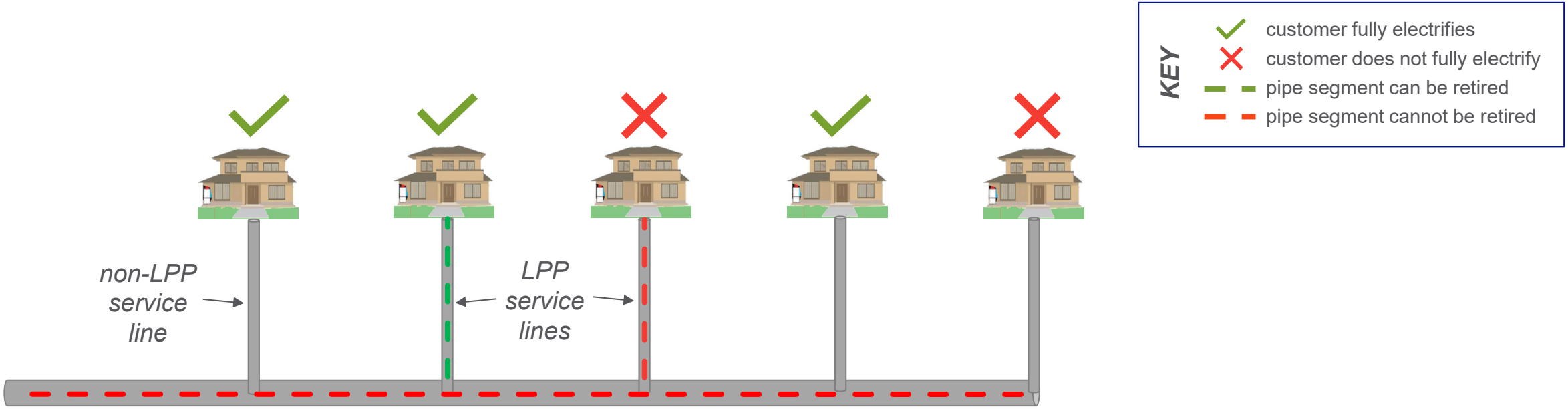
- If one or more eligible participants located at the end of a radial leak-prone pipe main do not wish to fully electrify – i.e., if 100% participation is not achieved – the main cannot be retired and the NPA cannot move forward
  - This 100% threshold is *not* a requirement or limit imposed by National Grid, but rather a necessary condition of being able to retire the leak-prone pipe and then use the infrastructure cost savings as additional incentives for customer electrification.
  - This threshold applies to LPP and New Connection NPAs, but does not apply to R&R NPAs. Instead, R&R NPAs have a threshold of a minimum aggregate peak demand reduction across a group of customers.
- National Grid will assess whether one of the two alternate scenarios listed in the slides below are feasible, and, if so, will change the scope of the potential NPA accordingly.

Scenario 1: Retiring a Portion of the LPP Main



- If (a) one or more eligible participants do not wish to fully electrify, but (b) a group of eligible participants that are contiguous to each other and located at the end of a radial segment of leak-prone pipe main do wish to fully electrify, then the portion of leak prone main that serves group (b) may be able to be retired.
- One of way of thinking about this is that the 100% participation threshold has been achieved, but only for that portion of the LPP main segment. In that case, the NPA incentive would be recalculated based upon the avoided cost of only that portion of the segment.

Scenario 2: Individual LPP Service Line Retirements



- If an LPP NPA does not achieve the 100% threshold, but some of the eligible participants are connected to the main via LPP service lines, then the avoided cost of those service lines could be offered to those individual customers as an NPA incentive.
    - One of way of thinking about this is that the 100% participation threshold has been achieved, but only for that LPP service line.
- Because the avoided cost of replacing a single LPP service line is lower than the avoided cost of replacing an LPP main, the incentive offered to each eligible participant would also be lower.

If a single customer out of a group on an LPP segment or New Connection request wants to move forward before the decision of the other customers is known, can they receive the incentive?

- If a single customer wants to fully electrify before the decisions of other customers are known (or while other customers are deliberating), they would be doing so before the 100% threshold was certain to be achieved.
- If that customer's electrification enabled the avoidance of a smaller portion of infrastructure – i.e. one of the two scenarios described in the slides above – then the customer might still be eligible for an NPA incentive.
- **Under the current regulatory framework, we could not offer that customer an incentive that would be equivalent to the NPA incentive that would be made available if all customers participated before the decisions of all customer affected by the infrastructure are known.**

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1. What could the NY Geo community do to make themselves aware of NPA RFP’s?
2. What are some of the lessons learned from your current NPA Portfolio of Projects?
3. How do you measure success for NPA’s?

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NYSEG/RGE Non-Pipes Alternatives

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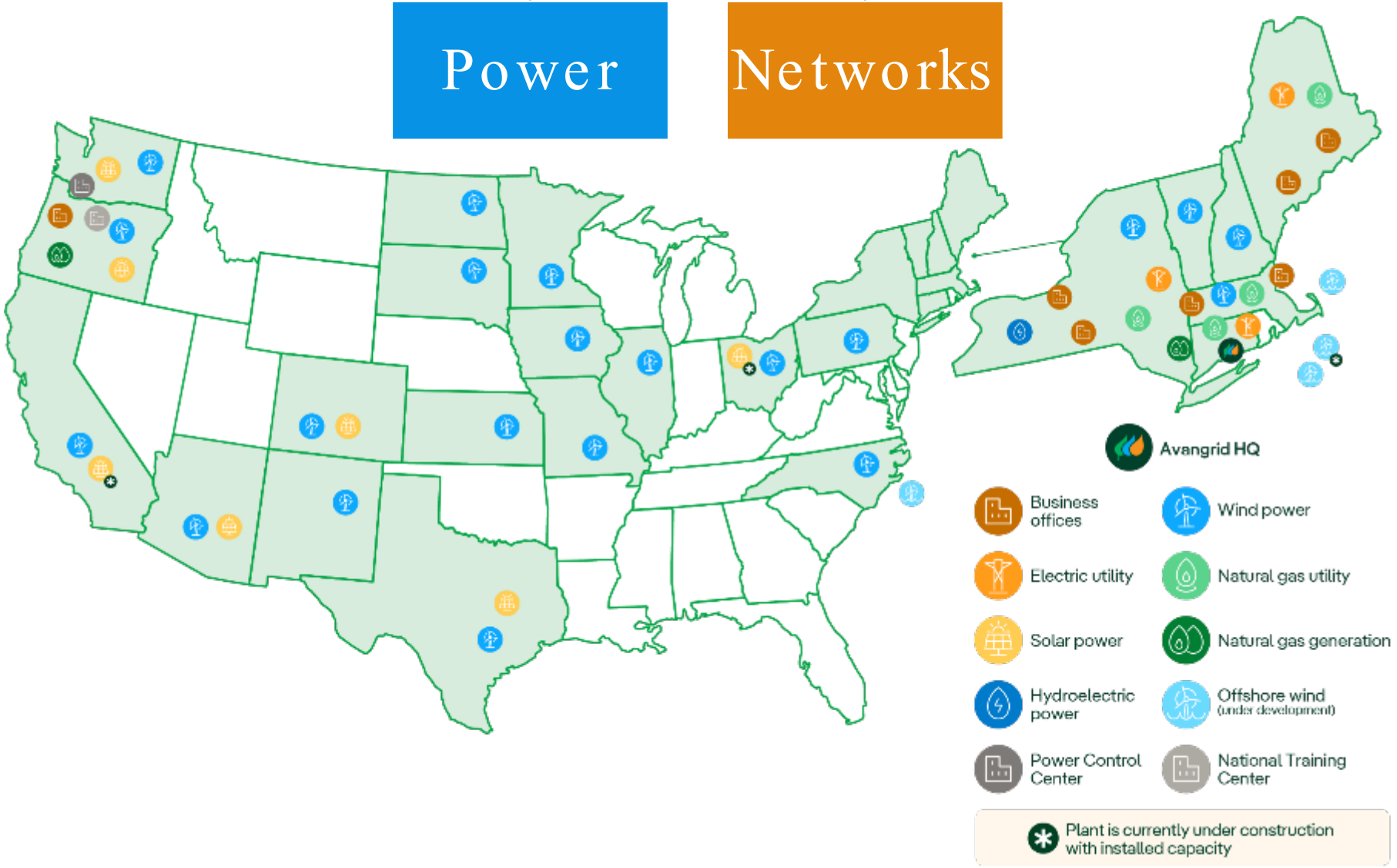
About AVANGRID

Avangrid

Power

Networks



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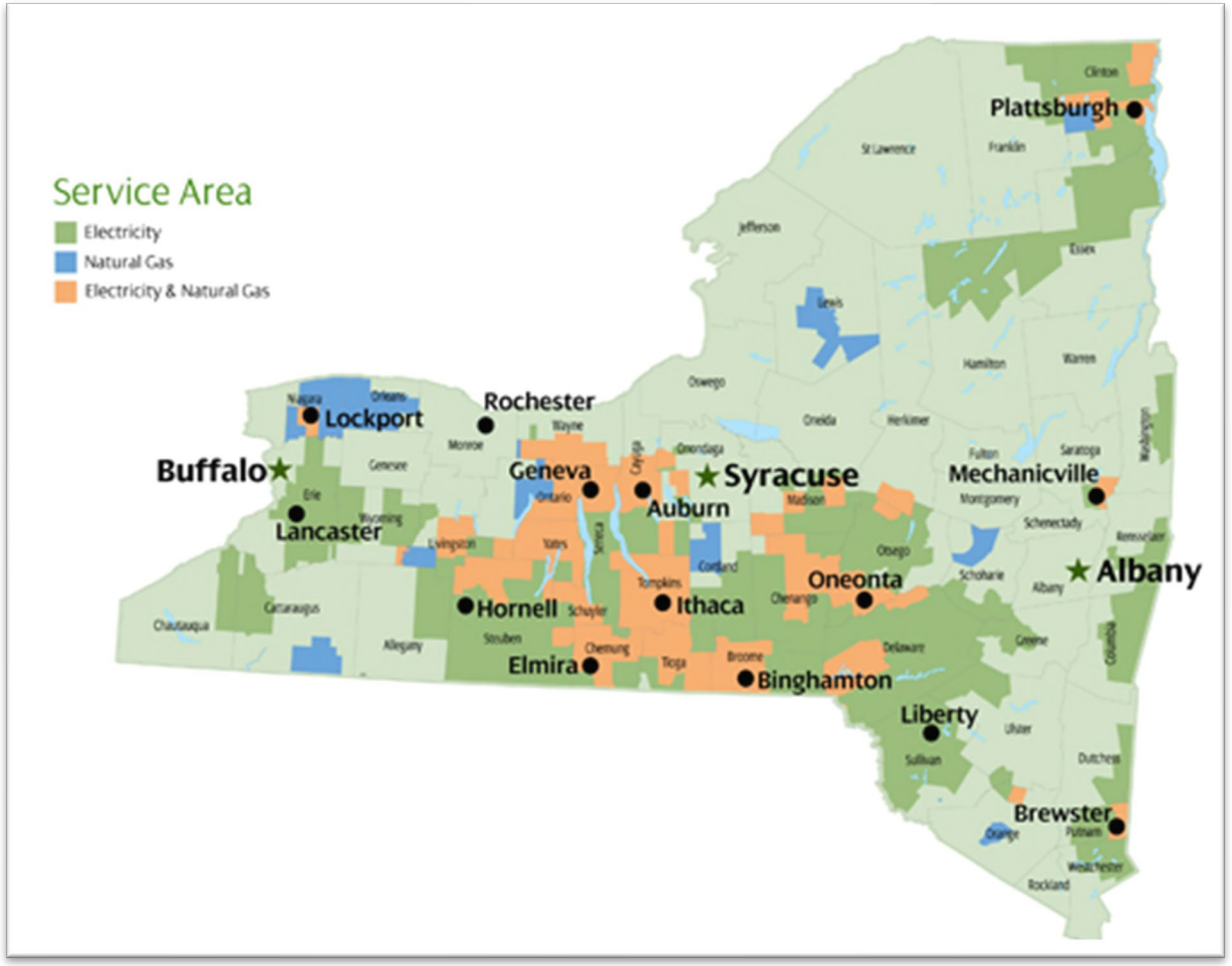

Service Area
Electricity
Natural Gas
Electricity & Natural Gas
Plattsburgh
Rochester
Lockport
Buffalo
Geneva
Syracuse
Auburn
Mechanicville
Lancaster
Albany
Oneonta
Hornell
Ithaca
Elmira
Binghamton
Liberty
Brewster

RG&E


Service Area
Electricity
Natural Gas
Electricity & Natural Gas
Plattsburgh
Rochester
Lockport
Buffalo
Geneva
Syracuse
Auburn
Mechanicville
Lancaster
Albany
Oneonta
Hornell
Ithaca
Elmira
Binghamton
Liberty
Brewster

Non-Pipes Alternatives

What is a Non -Pipes Alternative (NPA)?

An NPA utilizes cost-effective third-party solutions to defer or avoid certain traditional natural gas capital pipeline projects needed to address system reliability concerns.

NPA Solutions
✓ Heat pumps
✓ Fuel Optimization
✓ Thermal storage
✓ Targeted energy efficiency
✓ Targeted demand response
✓ Heat recovery systems
✓ Combined heat and power technology
✓ Renewable natural gas
✓ Hydrogen
✓ Compressed and liquified natural gas

Category	Description
Construction Imminent	Highway/ municipal
Construction Imminent	Active corrosion
Threat to Public Safety	Significantly reduces ability to reliably provide gas service
Threat to Public Safety	Eliminates gas service to downstream/ out-of-scope existing customers
Threat to Public Safety	Active leak
Customer Funded Projects	100% customer-funded new connections and/ or projects fully covered by the natural gas tariff

Non-Pipes Alternatives (NPA) – Project Development

1. Natural gas system need identification
2. Determine NPA feasibility
   - Apply screening criteria to identify beneficial candidates
3. Development of solutions
   - Traditional gas system solution development
   - NPA solution development (small vs. large project process)
4. Project evaluation including benefit cost analysis (BCA) to determine economic and technical feasibility

Leak Prone Pipe - Whole Home Electrification Program

Whole Home Electrification Program was implemented by NYSEG & RGE in 2022

100% electrification of customers within a LPP segment

Standard conversion package offered at **no cost** to customer

Leak Prone Pipe (LPP) Process

Goal

- Electrify 100% of customers in target area (or portion of customers at the end of a main)
- Heating, water heating, cooking, fireplace, pool heating, commercial processes, etc.

1

- Perform internal review of LPP projects to prioritize list based on time of need, availability of customer information, type of pipe, and likelihood of project success

2

- Perform preliminary streamlined benefit cost analysis, research area/ community data (disadvantaged community, median income level, etc.), compile vulnerable location and segment risk data

3

- Leverage contracted third party experts and trade ally network to conduct customer outreach
- Educational efforts include direct mailers, in person meetings, and phone/ email outreach

4

- Third party develops a comprehensive conversion proposal for each customer and performs the installation
- Offer standard conversion package at no cost to the customer (some measures may require co-pay)
- Incentive includes available EE incentives + LPP kicker to cover incremental cost

Project Example – NYSEG Lansing Non -Pipes Alternatives (NPA) Portfolio

History

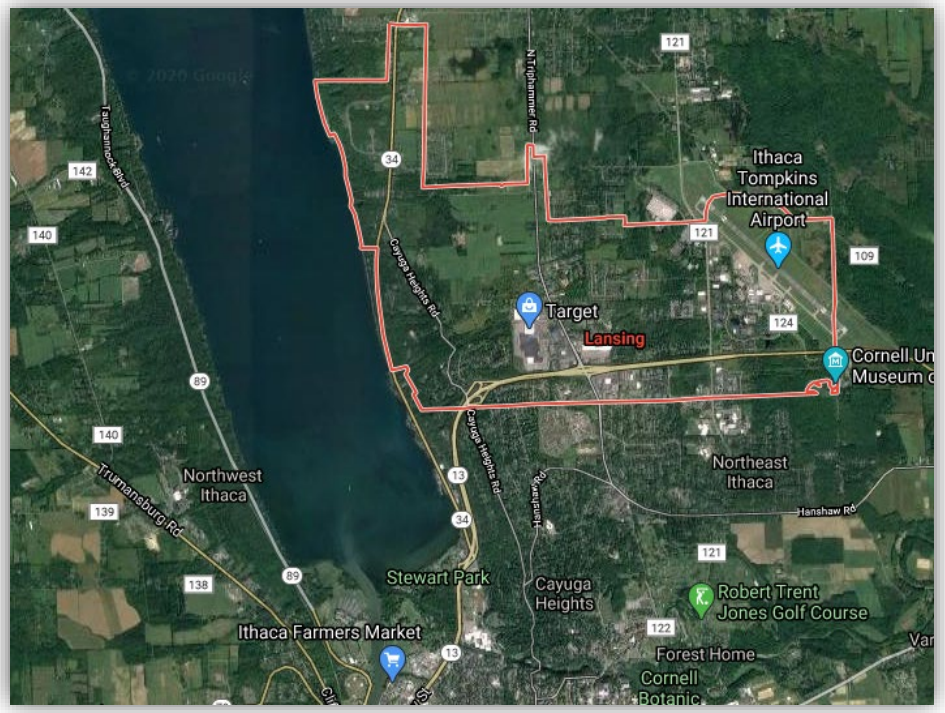
- Ithaca-Lansing natural gas distribution system is designed for Maximum Allowable Operating Pressure ("MAOP") of 60 Pounds Per Square Inch Guage (PSIG)
- NYSEG's Gas Engineering standards for reliability recommend system pressures ≥ 50% of MAOP
- 2,300 natural gas customers served in Lansing Area

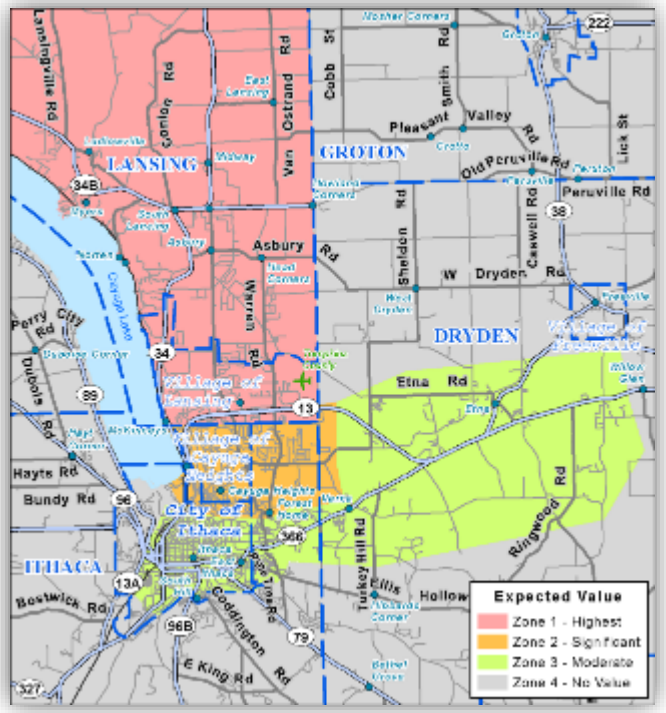
Reliability Issues

- Ithaca region experienced significant growth, resulting in lower system pressure since the mid 2010s
- Design day pressure (prior to East Shore): 215 PSIG using 2022 model (35.8% of MAOP)
- A steady decline in the % of MAOP has led to reliability concerns of the distribution system impacting Lansing

Lansing Gas Moratorium

- Began February 2015
- NYSEG unable to approve applications for expanded gas service from new or existing customers in Lansing





Project Example – NYSEG Lansing Non -Pipes Alternatives (NPA) Portfolio

Residential Heat Pumps

Regional HVAC installers

Residential energy audits

Install heat pumps

Provide support with energy efficiency solutions

Single Commercial Ground Source Heat Pump

Install Ground Source Heat Pump

Install energy efficiency measures

Community Ground Source Heat Pump

Build community geothermal loop

Install heat pumps in 25 customers homes and connect to loop

Install energy efficiency measures

Energy Efficiency at Two Public Authority Buildings

Install high efficiency natural gas boilers

Install energy efficiency measures

Education & Outreach

Provide educational program with local schools

Perform community-based outreach

Increase awareness of ongoing Lansing NPA Projects

Increase project participation

64 events 2022-2024

Project Example – NYSEG Lansing Non -Pipes Alternatives (NPA) Portfolio

Technology Type	MCFH Reduction	Cost
Residential Heat Pumps	42.7	$6,403,500
Lansing Single Commercial Ground Source Heat Pump	0.4	$131,166
Lansing Community Ground Source Heat Pump	2.1	$1,311,387
Lansing Energy Efficiency at Two Public Authority Buildings	4.1	$710,437
Lansing Education & Outreach Program	Complements other proposal MCFH reduction goal	$245,718
Total	49.3	$8,802,208

MCFH = Thousand Cubic Feet per Hour

QUESTIONS?

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